

# **Data ONTAP 7-Mode Administration (D7ADM)**

**Modality: Multi-Location Classroom**

**Duration: 5 Days**

**NATU: 60 Units**

## **About this course:**

Data ONTAP-8.2 develops on the Data ONTAP-8 OS reliability and stability and offers new features that separate it from all competition. The 5 days instructor-led program helps you to perform various administrative and support functions on a NetApp storage system running the Data ONTAP System running in 7-Mode.

This program is designed for partners, clients, and employees of NetApp, who perform administrative functions and offer basic support of the Data ONTAP-8.2 OS.

The NetApp storage administrator can earn an average salary of \$122,000 per annum.

## **Course Objectives:**

After completion of this course, students have the ability to:

- Execute fundamental administration on a storage system
- Configuration and identification of client protocols
- Determine the different features of a NetApp storage environment
- Explain space consumption and Snapshot copies in Data ONTAP
- Execute and install the configuration of Data ONTAP
- Configure and explain logical and physical storage
- Explain backup techniques accessible in Data ONTAP
- Define virtualization methods accessible in Data ONTAP

## **Audience:**

- This program is designed for partners, clients, and employees of NetApp who execute administrative functions and offers fundamental support of the ONTAP 7-Mode OS.

## **Prerequisites:**

• Candidates who enrolled in this program must have experience in system administration for MS Windows or UNIX OS and Data ONTAP-7-Mode Fundamentals (WBT)

## **Course Outline:**

### **Module 1 The NetApp Storage Environment**

- Identify the key features and functions of NetApp storage systems
- Describe the advantages that a NetApp storage system provides
- Distinguish between network-attached storage (NAS) and SAN topologies
- Describe NetApp Unified Storage Architecture
- Access the NetApp Support site to obtain software and hardware documentation

### **Module 2 WAFL Simplified**

- Describe how data is written to and read from WAFL (Write Anywhere File Layout) file system on a volume
- Explain the WAFL file system concepts, including consistency points (CPs), RAID management, and storage levels
- Describe how RAID is used to protect disk data
- Explain how the WAFL file system processes write and read requests

### **Module 3 Basic Administration**

- Connect remotely to a FAS system by using the console and a remote host
- Access NetApp System Manager to administrator a storage system
- Execute commands by using the console, a remote host and NetApp System Manager
- Use commands to analyze a FAS system
- Configure and manage the NetApp AutoSupport tool for a FAS system

### **Module 4 Physical Storage**

- Describe Data ONTAP RAID technology
- Identify a disk in a disk shelf based on its ID
- Execute commands to determine a disk ID
- Identify a hot-spark disk in a FAS system
- Describe the effects of using multiple disk types
- Create a 32-bit aggregate and a 64-bit aggregate
- Execute aggregate commands in the Data ONTAP operating system
- Calculate usable disk space

### **Module 5 Logical Storage**

- Explain the concepts related to volumes in the Data ONTAP operating system
- Define and create a flexible volume
- Execute vol commands
- Define and create qtrees

## Module 6 Administration Security

- Restrict administrative access
- Restrict console and NetApp System Manager access
- Configure a client machine as an administration host to manage a storage system

## Module 7 Networking

- Identify the configuration of network settings and components in the Data ONTAP operating system
- Explain and configure name resolution services
- Configure routing tables in the Data ONTAP operating system
- Define and create interface groups
- Discuss the operation of virtual LANs (VLANs) and how to route them

## Module 8 NFS

- Explain NFS implementation in the Data ONTAP operating system
- License NFS on a storage system
- Explain the purpose and format of /etc/ exports
- List and define the export specification options
- Describe the use of the exportfs command
- Mount an export on a UNIX host

## Module 9 CIFS

- Describe the CIFS environment
- Configure the storage system to participate in the CIFS environment
- Share a resource on the storage system
- Map a drive from a client to the shared resource on the storage system

## Module 10 NAS Management

- List some security methods for protecting data
- Explain and configure a security style setting for a volume and a qtree
- Describe methods of tracking and restricting storage usage
- Explain, create, and manage quotas
- Explain and configure the Data ONTAP FPolicy file-screening policy

## Module 11 SAN

- Explain the purpose of a SAN
- Identify supported SAN configurations
- Distinguish between Fibre Channel (FC), Fibre Channel over Ethernet (FCoE) and iSCSI protocols
- Define a LUN and explain LUN attributes
- Use the LUN setup command and NetApp System Manager to create iSCSI-attached LUNs
- Access and manage a LUN from a Windows host

- Define SnapDrive data management software and its feature

## **Module 12 Snapshot Copies**

- Describe the function of Snapshot copies
- Explain the benefits of Snapshot copies
- Identify and execute Snapshot commands
- Create and delete Snapshot copies
- Configure and modify Snapshot options
- Explain the importance of the .snapshot directory
- Describe how Snapshot technology allocates disk space for volumes and aggregates
- Schedule Snapshot copies
- Configure and manage the Snapshot copy reserve

## **Module 13 Space Management**

- List the storage efficiency techniques that are available within the Data ONTAP operating system
- Identify the factors that impact space consumption in the Data ONTAP operating system
- Describe how and when a volume consumes space from the aggregate that contains it
- Explain how to guarantee writes for a file
- Explain how the Data ONTAP operating system can provide space to a full volume
- Identify the deduplication and compression techniques that are available in the Data ONTAP operating system

## **Module 14 High-Availability**

- Describe high-availability (HA) solutions
- Discuss how HA increases the reliability of storage
- Define HA controller configuration
- Describe the three modes of HA operation with an HA pair
- Analyze how HA affects clients protocols during failover and giveback operations

## **Module 15 Virtualization Solutions**

- Describe how to virtualize a storage controller by using MultiStore software
- Configure MultiStore software
- Assign client protocols on MultiStore software

## **Module 16 Backup and Recovery Methods**

- List the methods available to back up and recover data
- Use ndmpcopy to process full and incremental data transfers
- Discuss dump and restore
- Describe, enable, and configure Network Data Management Protocol (NDMP) on a storage system

## **Module 17 Data Collection Tools**

- Use the sysstat, stats, and statit commands
- Describe the factors that affect RAID performance
- Execute commands to collect data about write and read throughputs
- Execute commands to verify the operation of hardware, software, and network components
- Identify commands and options that are used to obtain configuration and status

## Module 18 Data ONTAP Upgrades

- Access the NetApp Support site for the following documents:
  - Data ONTAP Upgrade Guide
  - Data ONTAP Release Notes
- Use a configuration worksheet to collect data for installation
- Describe how to perform Data ONTAP software upgrades and reboots
- Use the setup command to configure a storage system

## Lab Exercises

Lab 1-1 Identify the exercise environment

Lab 1-2 Explore the NetApp support site

Lab 2-1 Explain how the Data ONTAP operating system writes data

Lab 2-2 Explain how the Data ONTAP operating system reads data

Lab 3-1 Log in to the exercise environment

Lab 3-2 Install System Manager

Lab 3-3 Add a storage system to NetApp System Manager

Lab 3-4 Use the CLI to access a storage system

Lab 3-5 Explore the Help command and privilege levels

Lab 3-6 List the options on a storage system

Lab 3-7 From the CLI, examine the system configuration of a storage system

Lab 3-8 Use NetApp System Manager to configure DNS

Lab 3-9 Use system manager to configure the AutoSupport tool

Lab 4-1 Exploring the current disk configuration

Lab 4-2 Understand the impact of disk scrub on a storage system

Lab 4-3 Run the storage configuration wizard

Lab 4-4 Use NetApp system manager to create a 64-bit aggregate

Lab 4-5 Use the CLI to create a 64-bit aggregate

Lab 4-6 Use the CLI to create a 32-bit aggregate and upgrade to 64-bit

Lab 4-7 Cause a disk to fail

Lab 4-8 Add disks to an aggregate

Lab 5-1 Use system manager to create a volume

Lab 5-2 Resize a volume

Lab 5-3 Delete a volume

Lab 5-4 Create qtrees

Lab 5-5 Delete qtrees

Lab 6-1 Create an administrative user account

Lab 6-2 Use the CLI to configure administrative security

Lab 6-3 Log in with a new user account

Lab 7-1 Use the System Manager to configure network settings

Lab 7-2 Use the CLI to configuration network settings

Lab 7-3 Use the CLI to create a single-mode interface group  
 Lab 7-4 Use the CLI to create a multimode interface group  
 Lab 8-1 Use NetApp System Manager to license NFS  
 Lab 8-2 Use NetApp System Manager to export a volume  
 Lab 8-3 Use the CLI to export a volume  
 Lab 8-4 Mount exports from an administration host  
 Lab 9-1 Use NetApp System Manager to license CIFS service  
 Lab 9-2 Use NetApp System Manager to configure CIFS service  
 Lab 9-3 Create a window domain user  
 Lab 9-4 Use the CLI and NetApp System Manager to view and create shares  
 Lab 9-5 Create a new share with computer management  
 Lab 9-6 Map shares to drive letters  
 Lab 9-7 Modify user permissions  
 Lab 9-8 Display CIFS sessions  
 Lab 9-9 Configure SMB 2.0 protocol  
 Lab 9-10 Terminate CIFS sessions  
 Lab 10-1 Create and manage quotas  
 Lab 10-2 Create a quota report  
 Lab 10-3 Modify the /etc/quotas file and implement quota changes  
 Lab 10-4 Use the CLI to create qtrees and quotas for the qtrees  
 Lab 10-5 Create a native file-blocking policy  
 Lab 11-1 License and start the iSCSI service  
 Lab 11-2 Configure iSCSI on Windows Server 2008 R2  
 Lab 11-3 Use NetApp System Manager to create a LUN  
 Lab 11-4 Use the CLI to create a LUN  
 Lab 11-5 Access LUNs from Windows Server 2008 R2  
 Lab 11-6 Nondistributively move a volume that contains a LUN  
 Lab 12-1 Use NetApp system manager to create a SnapShot copy  
 Lab 12-2 Restore a windows file from a SnapShot copy  
 Lab 12-3 Restore a Linux file from a SnapShot copy  
 Lab 12-4 Use NetApp system manager to manage SnapShot copies  
 Lab 12-5 Restore a file by using the windows previous version tool  
 Lab 12-6 License and configure SnapRestore technology  
 Lab 12-7 Revert a volume using SnapRestore technology to restore a volume  
 Lab 12-8 Use SnapRestore technology to restore a file  
 Lab 13-1 Explore volume space consumption  
 Lab 13-2 Explore file space consumption  
 Lab 13-3 Configure deduplication  
 Lab 15-1 Create two MultiStore systems with separate IP aliases  
 Lab 15-2 Create a CIFS share on a MultiStore system  
 Lab 15-3 Create an iSCSI LUN on a MultiStore system  
 Lab 16-1 Copy a volume by using the NDMPCOPY command  
 Lab 17-1 Identify the commands that you can use to troubleshoot and solve problems  
 Lab 17-2 Run the statit command on a storage system  
 Lab 17-3 Run the stats command on a storage system